



PhilSA

Philippine Small Satellites

24th UNISEC Global Meeting

20 August 2022

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Philippine Space Agency

Disasters in the Philippines

4th

Most disaster-
Prone country



20

average
typhoon
visit yearly



**PACIFIC
RING OF
FIRE**







Impact of Typhoon Haiyan in the Philippines



3.4 MILLION
FAMILIES AFFECTED



16 MILLION
PEOPLE AFFECTED



9.49 BILLION
DAMAGE TO CROPS



MORE THAN
1 MILLION
HOUSES DAMAGED



6 BILLION
DAMAGE TO FISHERIES



2.89 MILLION
DAMAGE TO LIVESTOCK



Google Earth

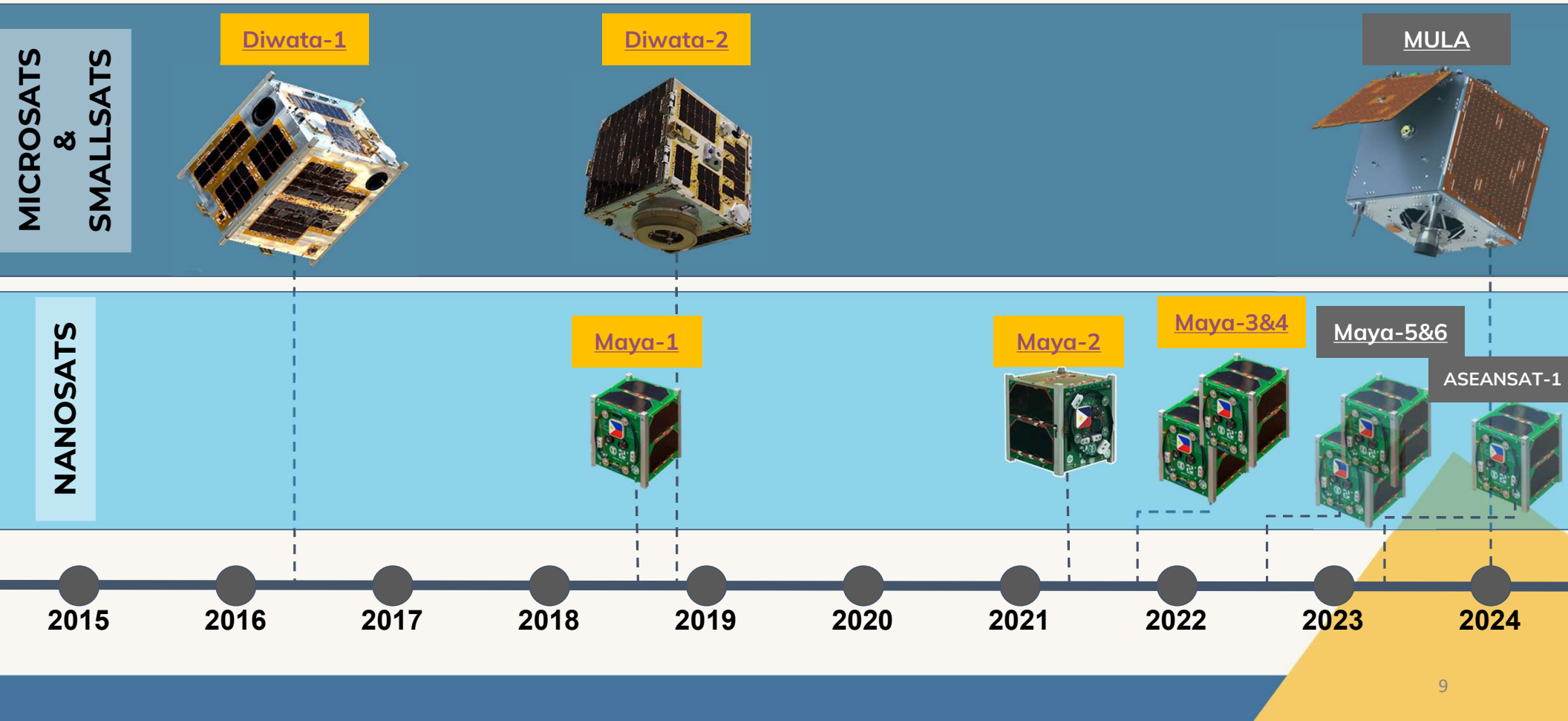
Philippine Small Satellites Timeline



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	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Diwata-1 (Microsat)										
Maya-1 (Nanosat)										
Diwata-2 (Microsat)										
Maya-2 (Nanosat)										
Maya-3,4 (Nanosat)										
Maya-5,6 (Nanosat)										
ASEANSAT-1 (Nanosat)										
MULA (Smallsat)										

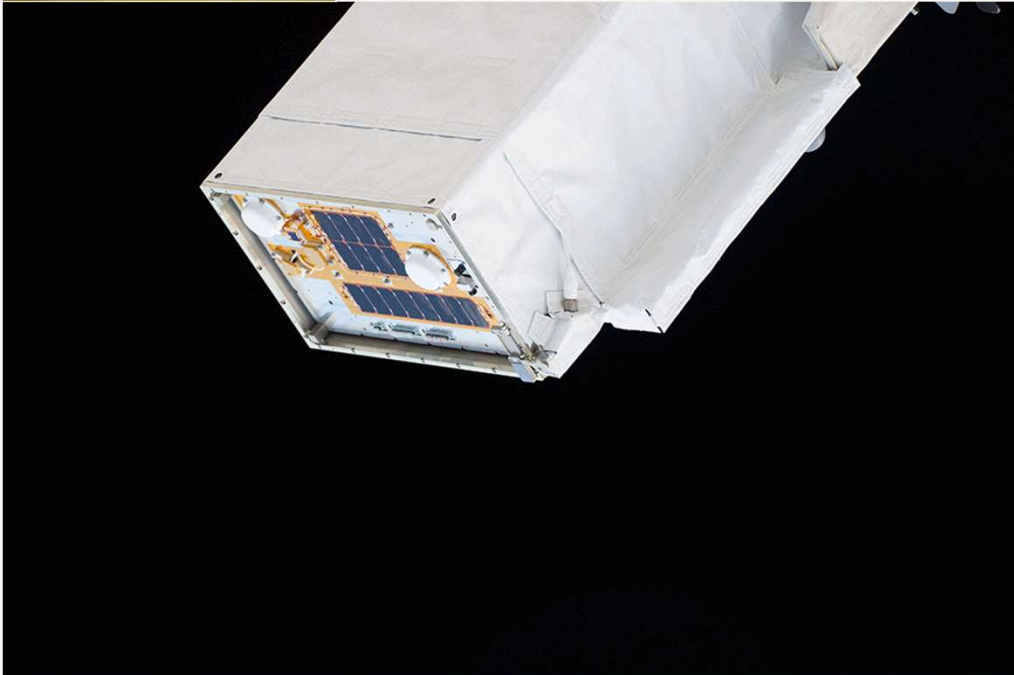
Philippine Small Satellites



Diwata-1



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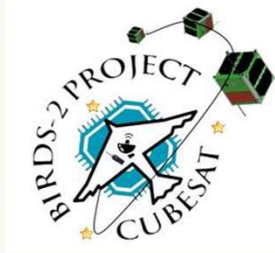
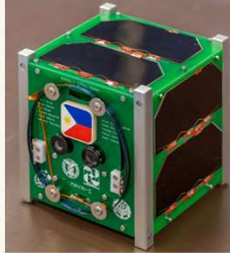
Type	Earth Observation (EO)
Class	Microsatellite
Mass	52 kg
Orbit	Low Earth Orbit (ISS)
Launch	March 23, 2016 via Atlas V Rocket from Kennedy Space Center, USA
Release	April 27, 2016 from the ISS
Payloads	<ol style="list-style-type: none">1. High Precision Telescope (HPT)2. Spaceborne Multispectral Imager (SMI)3. Middle Field Camera (MFC)4. Wide Field Camera (WFC)
Status	Decommissioned (April 2020)





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Maya-1



Type Technology Demonstration

Class Nanosatellite (CubeSat)

Mass 1.11 kg

Orbit Low Earth

Launch June 29, 2018 via SpaceX Falcon 9 rocket launched from Kennedy Space Center, Cape Canaveral (Florida, USA)

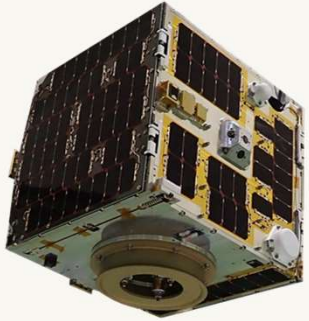
Release August 20, 2018 via International Space Station (ISS)

- Payloads**
1. Camera
 2. Automatic Packet Reporting System Message Digipeater (APRS-DP) payload
 3. Global Positioning System (GPS) chip
 4. Anisotropic Magnetoresistance Sensor
 5. Single Event Latch-up (SEL) monitor

Status Decommissioned (November 23, 2020)



Diwata-2



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Type Earth Observation (EO)

Class Microsatellite

Mass 57 kg

Orbit LEO (SSO, ~600km)

Launch October 29, 2018 Via HII-A F40 rocket launched from Tanegashima Space Center, Japan

Release Direct release to space via rocket

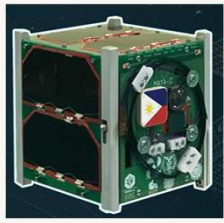
Payloads

1. High Precision Telescope (HPT)
2. Spaceborne Multispectral Imager (SMI)
3. Middle Field Camera (MFC)
4. Wide Field Camera (WFC)
5. Enhanced Resolution Camera (ERC)
6. Amateur Radio Unit (ARU)

Status Operational



Maya-2



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Type Technology Demonstration

Class Nanosat (CubeSat)

Mass 1.3 kg

Orbit LEO (ISS)

Launch February 21, 2021 1:36 a.m. Philippine Time aboard the S.S. Katherine Johnson Cygnus spacecraft as part of the Northrop Grumman CRS-15 mission

Release March 14, 2021 6:50 p.m. Philippine Time

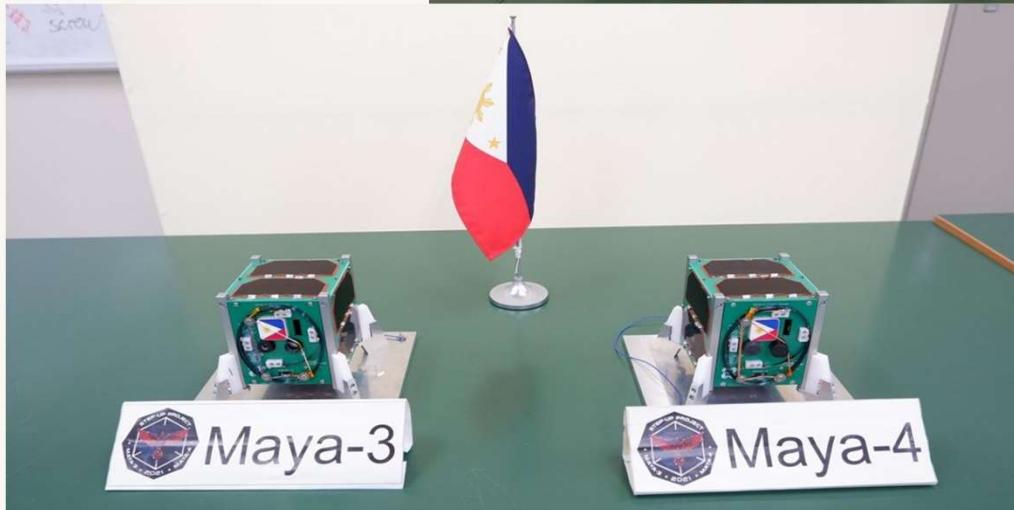
Payloads

1. Camera
2. Automatic Packet Reporting System Message Digipeater (APRS-DP) payload
3. Attitude determination and control units
4. Perovskite solar cells
5. Latchup-detection chip

Status Decommissioned (July 5, 2022)



Maya-3 & Maya-4



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Type	Technology Demonstration
Class	Nanosatellite (CubeSat)
Mass	1.15 kg
Orbit/Altitude	Low Earth
Deployment	October 6, 2021 from the International Space Station
Payloads	<ol style="list-style-type: none">1. RGB Camera2. Automatic Packet Reporting System Message Digipeater (APRS-DP) Payload3. Global Positioning System (GPS) Chip4. Anisotropic Magnetoresistance Sensor5. Near Infrared (NIR) Camera (only in Maya-4)
Status	Decommissioned (August 4 & 8, 2022)





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Maya-5 & Maya-6

STeP-UP Batch 2 Scholars



Angela Clarisse Chua
CAM | ICU | ADCS
Mission Lead



Anna Ruth Alvarez
Communications Subsystem



Khazmir Camilla Macaraeg
HNT | ANT
Communications Subsystem Lead



Gio Asher Tagabi
OBC-EX | ADCS
Project Manager | Documentation



Chandler Timm Doloriel
OBC | ICU



Genesis Remocaldo
Structure | Antenna Deployment



Ronald Collamar
TMCR | GLL | EPS | BPS
AIT Lead



Joseph Jonathan Co
SF-WARD | APRS-DP | GS
Subsystems Lead



Type Technology Demonstration

Class Nanosatellite (CubeSat)

Mass 1.15 kg

Orbit/Altitude LEO (ISS)

Deployment TBA

Maya-5

1. ADCS and Hentenna Mission Board
2. Image capture and classification, APRS, Store and Forward

Payloads

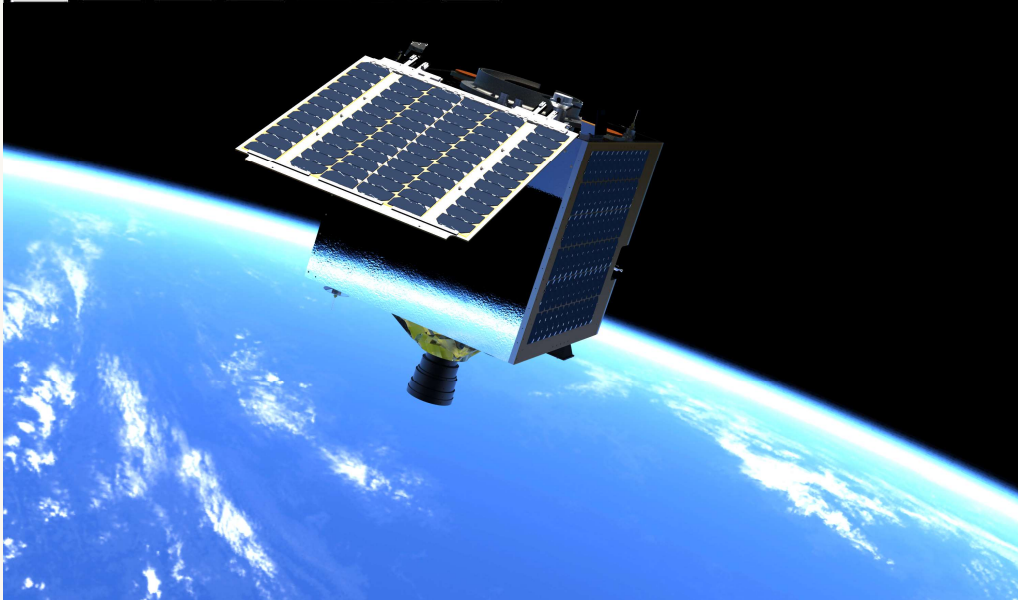
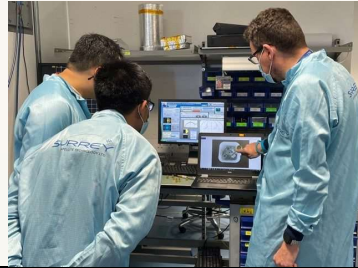
Maya-6

1. OBC-Ex Mission Board
2. Image capture and classification, APRS, Store and Forward

Status In development (FM testing)



MULA



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Type Operational (Earth Observation)

Class Small satellite

Mass 130 kg

Orbit Low Earth/ ~600 km

Payloads

1. Truecolor Multispectral Imager
2. Automatic Identification System (AIS)
3. Automatic Dependent Surveillance-Broadcast (ADS-B)

Launch TBA

Status Under development





**Thank you for your
attention!**

Maraming salamat po!